CLAIMS

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. A method for authenticating a user for input of control information for an electronic device, said method comprising:

acquiring through a scanner at least two fingerprint images of a finger; and

extracting from each said fingerprint image at least one contact parameter, calculated by computing correlations between image attributes in each said fingerprint image.

2. A method as in claim 1, wherein said contact parameter is rotation.

3. A method as in claim 1, wherein said contact parameter is translation.

4. A method as in claim 3, further comprising calculating pitch and roll rotations.

5. A method as in claim 1, further comprising computing correlations of a single portion of said image.

6. A method as in claim 1, further comprising computing correlations between a multiplicity of small regions.

7. A method as in claim 1 further comprising determining the rate of change of some control parameter where a rotation or translation of said finger

relative to a reference position is used to determine the rate of change of some control parameter of the computer.

8. A method as in claim 7 further comprising, measuring a pitch and roll rotation, and using to control the position of a cursor in the computer.

9. A method as in claim 7 wherein said the reference position is the position at which contact with the scanner is first registered, the reference point being reset every time the finger reestablishes contact with the scanner.

10. A method as in claim 1 further comprising comparing successive, and possibly consecutive, images taken from a single period of contact of said finger with said scanner.

11. A method as in claim 1 wherein at least one said fingerprint images is a reference image captured previously.

12. A method as in claim 11 wherein the reference image is labeled with known rotation information.

13. A method as in claim 12 further comprising prompting the user to present the finger at known rotations in an enrollment stage to provide said known rotation information

14. A system for authenticating a user and for input of pointing information for a computer, said system comprising:

a fingerprint image acquisition scanner for acquiring a fingerprint image of a finger; and

an image processor for extracting from said fingerprint image at least one contact parameter other than any optional authentication status data for said fingerprint image.

15. A system as in claim 14 wherein a multiplicity of variations in each of said contact parameters are used to verify an acquisition of data in real time from a live user.

16. A system as in claim 15 wherein a user is directed by the system to follow through on any combination of a multiplicity of prompts including: change a position of, add pressure to contact or rotate said finger from which a fingerprint image is acquired and wherein said multiplicity of prompts are verified by the system to ensure that the data is being generated at the time of direction.

17. A system as in claim 14 where the user is prompted to enact a sequence of finger actions previously registered by the user as a "password" for the device.

18. A system as in claim 14 wherein a motion of the finger tip is interpreted as a gesture for recognition by a gesture engine, for instance character recognition or a Graffiti like engine.

19. The system of claim 14, further comprising:

a feature extraction processor for extracting representative features from said fingerprint image;

a memory for storing representative features of at least one authorized user; and

a feature comparison processor for comparing said stored representative features with said extracted representative features, and generating authentication status data therefrom.

20. A system as in claim 19 wherein an identity of a user is used to set customized features of the computer.

21. A system as in claim 19 where the identity of said user is used to set customized parameters of the pointing device.

22. A system for imaging a fingerprint for input of control information for an electronic device, said system comprising:

a fingerprint image acquisition scanner for acquiring a fingerprint image of a finger; and

an image processor for extracting from said finger print image at least one contact parameter, representing the angle of the finger in relation to the scanner, where said angle is calculated by computing correlations between image attributes an two or more images acquired from scanners.

23. A system for authenticating a user and for input of pointing information for a computer, said system comprising:

a multiplicity of fingerprint image acquisition scanners providing a large input surface for acquiring a fingerprint image of a finger; and

an image processor for extracting from said fingerprint image at least one contact parameter other than any optional authentication status data for said fingerprint image.

24. A system as in claim 23, where the scanner consists of a one-

dimensional array of small fingerprint scanners.

25. A system as in claim 24, where the scanner consists of a two-dimensional array of small fingerprint scanners.

26. A system as in claim 17, where the "password" is a sequence of touching individual small fingerprint scanners in a specific order with the same finger.

27. A system as in claim 26, where the password is a sequence or touching individual small fingerprint scanners in a specific order, with more than one finger being used in the sequence either serially or in parallel.